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REMARKS

In the Office Action, the Examiner noted that claims 1-22 are pending in the application and that claims 1-22 stand rejected. By this response, claims 1, 15, 17 and 22 are amended to more clearly define the Applicant's invention and to correct for informalities pointed out by the Examiner and not in response to prior art. All other claims are un-amended by this response.

In view of the above amendments and the following discussion, the Applicant respectfully submits that none of these claims now pending in the application are obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant also submits that all of these claims now satisfy the requirements of 35 U.S.C. §112. Thus the Applicant believes that all of these claims are now in allowable form.

Objections

A. Claim 1

The Examiner objects to claim 1 stating that in claim 1 the portion beginning "a head-end coupled to" may be intended to begin, "a head-end node coupled to."

In response, the Applicant has amended claim 1 to recite "a head-end node coupled to" as suggested by the Examiner. Having done so, the Applicant respectfully submits that the basis for the Examiner's rejection of claim 1 has been removed. As such, the Applicant respectfully requests that the Examiner's objection to claim 1 be withdrawn.

Rejections

A. 35 U.S.C. § 112

The Examiner has rejected claims 1, 15, 17 and 22 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Examiner alleges that the claims contain subject matter which was not described in the specification in such a way as to as to reasonably convey to one

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skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention. The Examiner states that the subject matter in question is a limitation which was introduced in Paper No. 14, filed on 24 December 2003 reciting that "a terminal node and another terminal node communicate with each other only through said head-end node."

In response, the Applicant has amended claims 1, 15, 17 and 22 to remove the limitation objected to by the Examiner and to recite that "said first terminal node and said second terminal node communicate with each other through said head-end node via respective separate communication channels" as clearly taught in the Applicant's Specification in such a way as to reasonably convey to one skilled in the art that the inventor, at the time the application was filed, had possession of the claimed invention.

Having made these changes, the Applicant respectfully submits that claims 1, 15, 17 and 22 as they now stand, comply with the written description requirement and hence fully satisfy the requirements of 35 U.S.C. § 112 and are patentable thereunder.

B. 35 U.S.C. § 103

The Examiner rejected claims 1-2, 4, and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Elrefale ("Multiwavelength Survivable Ring Network Architectures"). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 1, Elrefale discloses a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network comprising: a first terminal node (Office #1 in Fig. 6) having a communication subsystem (Figs. 1-3 or 7) configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem (not shown, but conventionally included as interface means between offices in Fig. 6 and local customer's equipments, Official Notice) configured to be coupled to a plurality of devices (local customers' equipments, Official Notice)

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to enable the devices to communicate over the ring network, and a multiplexing subsystem (ADM in Fig. 7) coupled to the tributary subsystem (interface means to local customers' equipments, Official Notice) and to the communication subsystem (Figs. 1-3 or 7) to channel signals between the plurality of devices and the ring network; a second terminal node comprising all of the aspects of the Applicant's claim 1 and a head-end node comprising all of the aspects of the Applicant's claim 1.

The Examiner concedes however that Elrefaie does not disclose the first and second nodes each having a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network but that WDM ring networks like that of Elrefaie typically have such subsystems. The Applicant respectfully disagrees.

The Examiner further concedes that Elrefaie does not disclose the integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signal but that determining an output wavelength at which to transmit received signals based on address information included in the received signal is conventionally known in the art. The Applicant respectfully disagrees.

The Applicant submits that Elrefaie fails to teach, suggest or make obvious at least the Applicant's claim 1, which specifically recites:

"A system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network comprising:

a first terminal node having a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network;

a second terminal node having a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a second wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of

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devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network; and

a head-end node coupled to the ring network to receive and to transmit signals at both the first and second wavelengths, the head-end node having a demultiplexer to isolate signals received at the first and second wavelengths, an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals, and a multiplexer to combine the received signals for transmission on the ring network at the first and second wavelengths;

wherein said first terminal node and said second terminal node communicate with each other through said head-end node via respective separate communication channels."

In support of at least claim 1, the Applicant in the Specification specifically recites:

Transition of a SONET/SDH ring 22 to a virtual star, switched architecture improves the cost-effectiveness and network capacity of an optical ring network. For example, with a conventional OC-48 ring, each node on the ring requires an OC-48 ADM. Each such ADM must be able to handle the full bandwidth of the ring and must be able to drop and to add tributaries into this high-speed channel. The aggregate bandwidth available to all nodes on the ring is about 2.5 Gbps, which must be shared among all nodes. It follows that the aggregate rate available to client systems coupled to each node is much less than the ring bandwidth; it is usually limited to about 622 Mbps (OC-12).

An approach based on a switched, virtual star architecture according to the present invention, is as follows. The OC-48 ADM at each node is replaced by an OC-12 terminal multiplexer, provided with an optical sub-system as discussed below that provides the functionality of a terminal node 26 in the virtual star network. A head-end node 24 is provided to terminate all uplinks and downlinks to and from terminal nodes 26 to effect a SONET/SDH cross-connect function for the traffic from the terminals.

Virtual star network 20 provides the functional behavior of an ADM-based OC-48 ring, but with added benefits. For example, because each terminal node 26 has available to it the full bandwidth for its wavelength, the aggregate rate available to each node in the virtual star is 622 Mbps (OC-12), regardless of the number of nodes in the network. For comparison, in an ADM-

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based OC-48 ring network of more than 8 nodes, the average capacity available to each node typically is less than 622 Mbps. Network transceiver hardware for terminal nodes 26 in virtual star network 20 is significantly less complex than that of an OC-48 ADM. This is due to the lower rates handled by terminal nodes 26 and the simpler functionality of a SONET terminal multiplexer as compared to an ADM. Less complexity results in lower cost and higher software and hardware reliability.

In virtual star network 20, when the traffic demands of a specific terminal node 26 exceed an aggregate of OC-12 terminal multiplexer, then that node can be upgraded (e.g., to an OC-48 Terminal Mux). This upgrade, however, need not affect the other nodes in the ring and will not as a practical matter decrease the bandwidth available to them. Thus, virtual star network 20 provides for lower cost in addition to improved functional benefits such higher reliability and improved effective throughput. (See Specification, Page 9, Line 3 to Page 10, Line 4.)

The Applicant further recites

Each terminal node 26 includes an optical subsystem 30, a multiplexing subsystem 32, a tributary subsystem 34, and a control subsystem 36 as shown in FIG. 2. Optical subsystem 30 implements an optical add/drop function that provides for transmission of an aggregated signal produced by multiplexing subsystem 32 on its dedicated optical channel 28 to head-end node 24. Tributary subsystem 34 includes interface cards of different types and rates to provide client interfaces 38 as appropriate for a given application, to which client systems (not shown) are coupled as desired. A communication interface 40 between tributary subsystem 34 and multiplexing subsystem 32 is provided to insulate multiplexing subsystem 32 from the effects of interfacing different client systems to tributary subsystem 34.

Multiplexing subsystem 32 receives the different tributary channels or signals from client systems coupled to tributary subsystem 34 over interface 40 and aggregates them onto a single stream with a format appropriate to the desired application, such as SONET/SDH, ATM or IP. This single stream is then passed over interface 42 to optical subsystem 30, which in turn transmits it over ring 22 to head end node 24. Conversely, multiplexing subsystem 32 receives an incoming aggregated signal stream from optical subsystem 30 that multiplexing subsystem 32 then demultiplexes into its constituent tributaries, each of which is then routed over interface 40 to a corresponding interface card in tributary subsystem 34.

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An alternative terminal node 26' architecture is provided without a tributary subsystem 34 as shown in FIG. 3. An external system 42 such as a SONET/SDH terminal mux for a SONET/SDH application, an ATM Service Mux for an ATM application, or an IP router for an IP application, is used to replace tributary subsystem 34 and part of multiplexing subsystem 32 in terminal node 26. A modified multiplexing subsystem 32' with an interface 40' to external subsystem 34 is provided, with the optical subsystem 30 and interface 42 being the same as the embodiment of FIG. 2.

Control subsystem 36 manages, configures and monitors the operation of the optical, multiplexing, and tributary subsystems 30, 32, 34. The control and optical subsystems 36, 30 are common to all applications of terminal node 26 in virtual star network 20, whereas the tributary and multiplexing subsystems 32, 34 are application specific. Tributary and multiplexing subsystems 32, 34 are implemented by plug-in modules that are accommodated by a common platform that includes control and optical subsystems 36, 30. (See Specification Page 11, Line 4 to Page 12, Line 5.)

It is clearly evident from at least the portions of the Applicant's disclosure presented above that the Applicant's invention is directed at least in part to a system for communicating on an optical WDM ring network using terminal nodes and a head-end node where each terminal node includes at least a communication subsystem to receive and transmit signals at a particular wavelength, a tributary subsystem to enable a plurality of devices to communicate over the network, and a multiplexing subsystem to channel signals between the devices and the ring network. More specifically, in the Applicant's invention, as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1, a tributary subsystem includes interface cards of different types and rates to which clients are connected to provide client interfaces as appropriate for specific applications. The Applicant's invention further includes a multiplexing subsystem for receiving the different client inputs and aggregating the inputs into a single channel having an appropriate format.

The Applicant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Elrefaie for a terminal node including a tributary subsystem and even further for a terminal node including a multiplexing subsystem coupled to the tributary subsystem for channeling signals between a

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plurality of clients and a ring network. In contrast to the Applicant's invention, Elrefaie specifically recites:

"Each local office is equipped with a single SONET ADM in the terminal mode [3] (Figure 7). Each ADM terminates two fibers for transmit and receive. The two transmitters in each ADM are arranged to continuously transmit signals into the ring in opposite directions. A multiplexer at the ADM receives both signals, usually selects one of them for normal operation, but can select the other one to recover from a network failure due to cable cut." (See Elrefaie, page 1246, col. 2).

Elrefaie teaches a multiplexer at the ADM of each local office for receiving both signals, usually selecting one of them for normal operation, and selecting the other one to recover from a network failure due to cable cut. However, there is absolutely no teaching, suggestion or disclosure in Elrefaie for a multiplexing subsystem coupled to a tributary subsystem and to a communication subsystem to channel signals between the plurality of devices and the ring network. That is, the Applicant's invention includes a multiplexing subsystem for receiving inputs from a plurality of different client and aggregating the inputs into a single channel having an appropriate format. In contrast to the invention of the Applicant, Elrefaie instead only teaches a multiplexer at the ADM of each local office for receiving two signals traveling in fibers in opposite directions, selecting one of them for normal operation, and selecting the other one to recover from a network failure due to cable cut. The Applicant respectfully submits that there is absolutely no teaching or suggestion in Elrefaie for a multiplexing subsystem as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Even further, the Applicant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Elrefaie for a head-end node including an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals. The Examiner in the Office Action took Official Notice that performing such determining based on address information included in received signals is a

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conventionally known means in the art. The Applicant submits though that the Applicant is not claiming to have invented such determining based on address information included in received signals. However, the Applicant respectfully submits that the Applicant's invention must be taken as a whole and not as individual components when determining if the Applicant's invention is obvious over a piece of prior art. The Applicant respectfully submits that the Applicant's invention as a whole is novel and determining an output wavelength at which to transmit received signals based on address information included in received signals in a virtual star network comprising all of the limitations of at least the Applicant's claim 1 is novel and inventive over at least the teachings of Elrefaie. That is, the Applicant respectfully reminds the Examiner that an invention must be taken as a whole and not as individual parts when attempting to determine if an invention is obvious over cited prior art. Determining an output wavelength at which to transmit received signals based on address information included in received signals in a virtual star network of the Applicant's invention is absolutely novel over the limited teachings of Elrefaie for at least the reasons stated above and specifically, at least because Elrefaie does not teach, suggest or make obvious a tributary subsystem, a multiplexing subsystem or an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals, as conceded by the Examiner.

As such, and for at least the reasons stated above, the Applicant respectfully submits that the teachings of Elrefaie do not teach, suggest or make obvious the invention of the Applicant at least with respect to claim 1. Therefore, the Applicant submits that claim 1 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Furthermore, dependent claims 2, 4 and 11-13 depend either directly or indirectly from independent claim 1 and recite additional features therefore. As such and for at least the reasons set forth herein, the Applicant submits that none of these claims is obvious with respect to the teachings of Elrefaie. Therefore the

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Applicant submits that dependent claims 2, 4 and 11-13 also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

C. 35 U.S.C. § 103

The Examiner rejected claim 3 under 35 U.S.C. § 103(a) as being unpatentable over Elrefaie as applied to claim 1 above, and further in view of Jahromi (U.S. Patent No. 5,416,768). The rejection is respectfully traversed.

Claim 3 depends directly from independent claim 1 and recites further limitations thereof. The Examiner applied Elrefaie to claim 3 as described above for the Examiner's rejection of claim 1. The Examiner alleges that the differences between Elrefaie and claim 3 is that Elrefaie fails to teach that the head-end node includes a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network. As such the Examiner cites Jahromi for alleging the teaching of such a tributary subsystem. The Applicant respectfully disagrees.

As described above, the teachings of Elrefaie do not teach, suggest or make obvious the Applicant's invention at least with regard to independent claim 1.

In addition, the teachings of Jahromi alone, for a digital cross-connection apparatus for use in interconnecting first and second communications networks (See Jahromi, Abstract), fail to teach, suggest or describe the Applicant's invention at least with regard to independent claim 1. Specifically, the digital cross-connection apparatus of Jahromi does not teach at least a head-end having an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals. Even further, the teachings of Jahromi alone fail to teach, suggest or make obvious a multiplexing subsystem for receiving inputs from a plurality of different client and aggregating the inputs into a single channel having

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an appropriate format as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in Elrefaie or Jahromi for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Jahromi fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Elrefaie.

As such the Applicant submits that the teachings of Elrefaie and Jahromi, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 obvious.

Therefore, at least because the teachings of Elrefaie and Jahromi, alone or in any allowable combination, do not teach, suggest, or make obvious the invention of the Applicant regarding at least claim 1 as discussed above, the teachings of Elrefaie and Jahromi also do not teach, suggest, or make obvious the invention of the Applicant regarding dependent claim 3, which depends from independent claim 1, and do not render the Applicant's claim 3 obvious.

Therefore, the Applicant submits that claim 3 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

D. 35 U.S.C. § 103

The Examiner rejected claims 5-8, 17-19, and 21-22 under 35 U.S.C. § 103(a) as being unpatentable over Elrefaie as applied to claim 1 above, and further in view of Armitage et al. ("Design of a Survivable WDM Photonic Network", hereinafter "Armitage"). The rejection is respectfully traversed.

Claims 5-8

Claims 5-8 depend either directly or indirectly from independent claim 1 and recite further limitations thereof. The Examiner applied Elrefaie to claims 5-8

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as described above for the Examiner's rejection of claim 1. The Examiner alleges that the differences between Elrefaie and claims 5-8 is that Elrefaie fails to teach that a subset of the signals further use a communication protocol framed by the communication standard, the head-end node includes at least one protocol subsystem to determine address information for the communication protocol, and the head-end node is configured to send signals using the communication protocol to the at least one protocol subsystem. The Examiner alleges, however, that it is well-known to use a protocol framed by the communication standard and that Armitage teaches the use of protocols framed by a standard. The Applicant respectfully disagrees.

As described above, the Applicant submits that the teachings of Elrefaie do not teach, suggest or make obvious the Applicant's invention at least with regard to independent claim 1. Even further and as conceded by the Examiner, Elrefaie does not teach, suggest or make obvious at least one protocol subsystem to determine address information for the communication protocol, and the head-end node is configured to send signals using the communication protocol to the at least one protocol subsystem as taught in the Applicant's Specification and claimed by at least the Applicant's claims 5-8. Again, the Applicant would like to respectfully point out to the Examiner that the Applicant is not claiming to have invented using a protocol framed by a communication standard but instead claims using such a protocol framing in an inventive virtual star network including at least a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network and a multiplexing subsystem coupled to the tributary subsystem and to a communication subsystem to channel signals between the plurality of devices and the ring network. The Applicant's invention must be taken as a whole.

In addition, the teachings of Armitage alone, for a backbone WDM photonic network consisting of optical cross-connect nodes interconnected by optical bidirectional links wherein each node is capable of routing any incoming wavelength channel on any of the incoming fibers to any wavelength channel on

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any of the outgoing fibers (See Armitage, Abstract) does not teach, suggest or make obvious the invention of the Applicant at least with respect to the Applicant's claim 1. Specifically, the backbone WDM photonic network of Armitage does not teach at least a head-end having an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals. Even further, the teachings of Armitage alone fail to teach, suggest or make obvious at least a multiplexing subsystem for receiving inputs from a plurality of different client and aggregating the inputs into a single channel having an appropriate format as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. The Applicant further submits that the Armitage also fails to teach, suggest or make obvious protocol framing in an inventive virtual star network including at least a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network and a multiplexing subsystem coupled to the tributary subsystem and to a communication subsystem to channel signals between the plurality of devices and the ring network as taught in the Applicant's Specification and claimed by at least the Applicant's claims 5-8.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in Elrefaie or Armitage for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Armitage fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claims 1 and 5-8 and the teachings and invention of Elrefaie.

As such the Applicant submits that the teachings of Elrefaie and Armitage, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 5-8 obvious.

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Therefore, the Applicant submits that claims 5-8 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Claims 17-19 and 21

The Examiner rejected claims 17-19 and 21 stating that these claims are system claims that correspond largely to coherent combinations of the limitations in system claims 1 and 5-8 and that since all these claims are rejected under Elrefaie in view of Armitage, all the limitations of system claims 17-19 and 21 are found in Elrefaie in view of Armitage. The Applicant respectfully disagrees.

For at least the reasons described above, the Applicant respectfully submits that the teachings of Elrefaie and Armitage, alone or in any allowable combination, fail to teach, suggest or make obvious the Applicant's invention at least with respect to claims 1 and 5-8 as described above. As such and because the Examiner states that claims 17-19 and 21 are system claims that correspond largely to coherent combinations of the limitations in system claims 1 and 5-8, the Applicant further submits that the teachings of Elrefaie and Armitage, alone or in any allowable combination, also fail to teach, suggest or make obvious the Applicant's invention at least with respect to claims 17-19 and 21 for at least the same reasons described above with respect to the Applicant's claims 1 and 5-8.

Therefore, the Applicant submits that claims 17-19 and 21 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Claim 22

The Examiner rejected claim 22 stating that this claim is a method claim that corresponds largely to coherent combinations of the limitations in system claims 1 and 5 and that since all these claims are rejected under Elrefaie in view of Armitage, all the limitations of method claim 22 is found in Elrefaie in view of Armitage. The Applicant respectfully disagrees.

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For at least the reasons described above, the Applicant respectfully submits that the teachings of Elrefaie and Armitage, alone or in any allowable combination, fail to teach, suggest or make obvious the Applicant's invention at least with respect to claims 1 and 5 as described above. As such and because the Examiner states that claim 22 is a method claim that corresponds largely to coherent combinations of the limitations in system claims 1 and 5, the Applicant further submits that the teachings of Elrefaie and Armitage, alone or in any allowable combination, also fail to teach, suggest or make obvious the Applicant's invention at least with respect to claim 22 for at least the same reasons described above with respect to the Applicant's claims 1 and 5-8.

Therefore, the Applicant submits that claim 22 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

E. 35 U.S.C. § 103

The Examiner rejected claims 9-10 and 17-20 under 35 U.S.C. § 103(a) as being unpatentable over Elrefaie in view of Armitage as applied to claim 5 above, and further in view of Lea (U.S. Patent No. 6,115,373). The rejection is respectfully traversed.

Claims 9-10

Claims 9-10 depend indirectly from independent claim 1 and recite further limitations thereof. The Examiner applied Elrefaie and Armitage to claims 9-10 as described above for the Examiner's rejection of claim 1. The Examiner alleges that the differences between Elrefaie and Armitage and claims 9-10 is that Elrefaie and Armitage fail to teach the second set of protocol-related limitations of claims 9-10. As such the Examiner cites Lea for alleging the teaching of such protocol-related limitations. The Applicant respectfully disagrees.

As described above, the teachings of Elrefaie and Armitage, alone, or in any allowable combination do not teach, suggest or describe the Applicant's

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invention at least with regard to independent claim 1. In addition, the teachings of Lea alone, for an information network architecture that can handle both ATM and IP traffic employing unbuffered switches employing a system of priority (See Lea, Abstract), do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein each node includes a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network. In the Applicant's invention at least with respect to claim 1, the multiplexing subsystem receives inputs from a plurality of different client and aggregates the inputs into a single channel having an appropriate format as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. In addition, the Applicant respectfully submits that Lea further fails to teach, suggest or make obvious a least a head-end having an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Elrefaie, Armitage or Lea for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Lea fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and the teachings and invention of Elrefaie and Armitage.

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As such the Applicant submits that the teachings of Elrefaie, Armitage and Lea, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 obvious.

Therefore, at least because the teachings of Elrefaie, Armitage and Lea, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 as discussed above, the Applicant submits that the teachings of Elrefaie, Armitage and Lea also do not teach, suggest, or describe the invention of the Applicant regarding dependent claims 9-10, which depend either directly or indirectly from independent claim 1, and do not render the Applicant's claims 9-10 obvious.

Therefore, the Applicant submits that claims 9-10 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Claims 17-20

Regarding claims 17-20 the Examiner alleges that claims 17-20 correspond largely to coherent combinations of the limitations in system claims 1 and 9-10. As such, the Examiner alleges that because the teachings of Elrefaie in view of Armitage and further in view of Lea make obvious the claims 1 and 9-10, the teachings of Elrefaie in view of Armitage and further in view of Lea also make obvious the claims of 17-20. The Applicant respectfully disagrees.

As described above, the teachings of Elrefaie and Armitage, alone, or in any allowable combination do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and dependent claims 9-10. In addition, the teachings of Lea alone, for an information network architecture that can handle both ATM and IP traffic employing unbuffered switches employing a system of priority (See Lea, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 and dependent claims 9-10.

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Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Elrefaie, Armitage or Lea for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Lea fall to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claims 9-10 and the teachings and invention of Elrefaie and Armitage at least as described above.

As such the Applicant submits that the teachings of Elrefaie, Armitage and Lea, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 9-10 obvious.

Therefore, at least because the teachings of Elrefaie, Armitage and Lea, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 9-10 as discussed above, the Applicant submits that the teachings of Elrefaie, Armitage and Lea also do not teach, suggest, or describe the invention of the Applicant regarding claims 17-20 which the Examiner suggests correspond largely to combinations of the limitations in system claims 1 and 9-10.

Therefore, the Applicant submits that claims 17-20 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

F. 35 U.S.C. § 103

The Examiner rejected claims 14-16 under 35 U.S.C. § 103(a) as being unpatentable over Elrefaie as applied to claim 12 above, and further in view of Wu et al ("Feasibility Study of A High Speed SONET Self-Healing Ring Architecture in Future Interoffice Fiber Networks", hereinafter "Wu"). The rejection is respectfully traversed.

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CLAIM 14

Claim 14 depends indirectly from independent claim 1 and directly from dependent claim 12 and recites further limitations thereof. The Examiner applied Elrefaie to claim 14 as described above for the Examiner's rejection of claim 12. The Examiner alleges that the differences between Elrefaie and claim 14 is that Elrefaie fail to teach that the head-end node further includes a selector that compares a pair of signals received by the pair of demultiplexers and selects a signal from the pair of signals based on a quality parameter of each signal. As such the Examiner cites Wu for alleging the teaching of such a selector. The Applicant respectfully disagrees.

As described above, the teachings Elrefaie, do not teach, suggest or make obvious the Applicant's invention at least with regard to independent claim 1 or dependent claim 12. In addition, the teachings of Wu alone, for using a SONET SHR architecture in future survivable interoffice fiber networks (See Wu, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Elrefaie or Wu for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Wu fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claim 12 and the teachings and invention of Elrefaie. More specifically, Wu fails to teach, suggest or make obvious at least a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein each node includes a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the

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devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network. In the Applicant's invention at least with respect to claim 1, the multiplexing subsystem receives inputs from a plurality of different client and aggregates the inputs into a single channel having an appropriate format as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1. In addition, the Applicant respectfully submits that Wu further fails to teach, suggest or make obvious a least a head-end having an integral cross-connect module to determine an output wavelength at which to transmit received signals based on address information included in the received signals.

As such the Applicant submits that the teachings of Elrefaie and Wu, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 or dependent claim 12 obvious.

Therefore, at least because the teachings of Elrefaie and Wu, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claim 12 as discussed above, the Applicant submits that the teachings of Elrefaie and Wu also do not teach, suggest, or describe the invention of the Applicant regarding dependent claim 14, which depends directly from claim 12 and indirectly from independent claim 1, and do not render the Applicant's claim 14 obvious.

Therefore, the Applicant submits that claim 14 as it now stands, fully satisfies the requirements of 35 U.S.C. § 103 and is patentable thereunder.

Claims 15-16

Regarding claims 15-16 the Examiner alleges that claims 15-16 correspond largely to coherent combinations of the limitations in system claims 1 and 12-14. As such, the Examiner alleges that because the teachings of Elrefaie in view of Wu make obvious the claims 1 and 12-14, the teachings of Elrefaie in

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view of Wu also make obvious the claims of 15-16. The Applicant respectfully disagrees.

As described above, the teachings of Elrefaie do not teach, suggest or describe the Applicant's invention at least with regard to independent claim 1 and dependent claims 12-14. In addition, the teachings of Wu alone, for using a SONET SHR architecture in future survivable interoffice fiber networks (See Wu, Abstract), do not anticipate or render obvious the Applicant's invention at least with regard to independent claim 1 directed, at least in part, to a system for communicating between a plurality of nodes coupled to an optical wavelength division multiplexed ring network wherein each node includes a communication subsystem configured to be coupled to the ring network to receive and to transmit signals at a first wavelength and to permit signals at other wavelengths to pass, a tributary subsystem configured to be coupled to a plurality of devices to enable the devices to communicate over the ring network, and a multiplexing subsystem coupled to the tributary subsystem and to the communication subsystem to channel signals between the plurality of devices and the ring network. In the Applicant's invention at least with respect to claim 1, the multiplexing subsystem receives inputs from a plurality of different client and aggregates the inputs into a single channel having an appropriate format as taught in the Applicant's Specification and claimed by at least the Applicant's claim 1.

Furthermore, the Applicant submits that there is absolutely no motivation or suggestion in either Elrefaie or Wu for the combination of the references to attempt to teach the invention of the Applicant.

The Applicant further submits that even if there was a motivation or suggestion to combine (which the Applicant maintains that there is not), the teachings of Wu fail to bridge the substantial gap between the Applicant's invention, at least with regard to independent claim 1 and dependent claims 12-14 and the teachings and invention of Elrefaie at least as described above.

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As such the Applicant submits that the teachings of Elrefaie and Wu, alone or in any suggested or allowable combination (if any did exist) do not render at least the Applicant's independent claim 1 and dependent claims 12-14 obvious.

Therefore, at least because the teachings of Elrefaie and Wu, alone or in any allowable combination, do not teach, suggest, or describe the invention of the Applicant regarding at least claim 1 and claims 12-14 as discussed above, the Applicant submits that the teachings of Elrefaie and Wu also do not teach, suggest, or describe the invention of the Applicant regarding claims 15-16 which the Examiner suggests correspond largely to combinations of the limitations in system claims 1 and 12-14 as alleged by the Examiner.

Therefore, the Applicant submits that claims 15-16 as they now stand, fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

Conclusion

Thus, the Applicant submits that none of the claims presently in the application are obvious under the provisions of 35 U.S.C. § 103. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If the Examiner believes that there are any unresolved issues requiring adverse action in any of the claims now pending in the application, it is requested that the Examiner telephone Jorge Tony Villabon, Esq. at (732) 530-9404 x 1131

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or Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,



Eamon J. Wall Attorney
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Dated: 11/4/04

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